



Geophysical Society of Houston

VOL. 36, NO. 3

NEWSLETTER

OCTOBER 2001

Technical Luncheon

Where: HESS Building
When: October 16th
Time: 11:30am
Cost: \$20, reservation
\$25, at the door

Seeing the invisible: The next generation in seismic depth imaging

J. Bee Bednar,
Advanced Data Solutions,
Houston, Texas, U.S.

The recent advent of fast, inexpensive personal computers (PC's) is revolutionizing modern seismic-depth imaging. Prices for supercomputer style computation, graphical display, and data storage halve every eighteen months.

Modern networking technologies couple inexpensive PC's into powerful clusters that easily solve problems once thought intractable on far more expensive machines. It is now feasible to utilize accurate, computationally intensive algorithms to produce subsurface images

that are vastly superior to that produced with current Kirchhoff technology.

Graphic capabilities provide a new interpretative processing environment for improved velocity analysis and Earth model estimation. In this talk we discuss these new advances and the technologies they make practical. We argue that our current focus on identification and estimation of the depth-interval-velocity model must evolve to identification and estimation of the elastic-Earth model.

Our emphasis is on comparisons between real and synthetic elastic data rather than on specific and detailed algorithms, but the conclusions and directions are clear. Exploration imaging technology, at commodity prices, can provide the necessary tools to enhance subsurface visibility and accurately position exploration targets.

Biography:



J. Bee Bednar,
Advanced Data Solutions,
Houston, Texas,
U.S.

J. Bee Bednar received a B.S degree in Music from Southwest Texas State in 1962 and followed this with M.A. and PH.D. degrees in mathematics from the University of Texas at Austin in 1964 and 1968 respectively. He has over 35 years of experience in signal processing, anti-submarine warfare research, and geophysical imaging and processing. He has been a researcher and consultant and has held positions in research and scientific management, as well as full professorships at Drexel University in Philadelphia and The University of Tulsa in Tulsa, OK. During his career, he has published numerous ar-

Technical Luncheon continued on page 3

2001 GSH TENNIS TOURNAMENT

FRIDAY, OCTOBER 5, 2001
at 12:00 NOON

Chancellors Racquet Club
6535 Dumfries
Houston 77096

I N S I D E T H I S I S S U E

GSH Meetings _____	
GSH Technical Luncheon	
October 16	1
GSH Technical Breakfast	
October 9	4

Articles and Comments _____	
Hickory Field: Integrated Technologies	
Revitalize a Sub-salt Prospect	5
:3d Full Tensor Gradient Enhanced	
Seismic Interpretation Green	
Canyon/Walker Ridge Area,	
Offshore, LA.	5

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Joan Henshaw, Office Manager • 7457 Harwin Drive, Suite 301 • Houston, Texas 77036 • Office Hours 8 a.m. - 5 p.m.

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TREASURER	Donna Sisak	281/654-7010	281/654-7820	donna.sisak@exxonmobil.com
EDITOR	Frank Levin	281/497-1090		fklevin@swbell.net
Company Contacts	Scott Sechrist	281/856-8029	281/856-7445	acoustic@airmail.net
Electronic Pub	Scott Sechrist	281/856-8029	281/856-7445	acoustic@airmail.net
Photography	John Freeland	713/689-2618	713/966-3084	
Publicity	Scott Sechrist	281/856-8029	281/856-7445	acoustic@airmail.net
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Editor's Note

To insure your information reaches the GSH society members in a timely manner it must appear in the in the appropriate newsletter issue. Please note the following deadlines and plan your function's publicity strategy accordingly. Items must be received on or before the corresponding deadline date. Materials may be sent to fklevin@swbell.net. If you have any questions please call Frank Levin at 281/497-1090.

2001 GSH Newsletter Deadlines

Issue November 2001
Deadline .. October 11, 2001

Technical Luncheon continued from page 1

ticles in mathematical, engineering, and geophysical journals and magazines.

He has also been a fellow at Stanford University and participated in Jon Claerbout's Stanford Exploration Project in the summer of 1997, 1998, and again in 1999. In Tulsa he was elected to and served the Geophysical Society of Tulsa in every possible capacity. At present Bee is Vice President of Research and Development at Advanced Data Solutions, in Houston TX. At Advanced Data Solutions, Bee is responsible for managing the development of and selection of technology for processing, distributed computing, and software sales.

GeoEvents Calendar

Make reservations by e-mail at reservations@hgs.org and include your member number (found on Bulletin mailing label), or use the phone reservation system at 713/917-0218.

Reservation Codes

Use these codes to make voice mail meeting reservations:

Technical Luncheon	601
Data Processing SIG	602
Interpretation SIG	603
Reservoir SIG	604
Potential Fields SIG	605
Environmental Applications SIG	606
Breakfast	607

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Thank you for your supporting the GSH!

For information on how to become a corporate member or to endow a scholarship with an organization's name please contact Pat Starich (281) 423-5036 or the GSH office at (713) 785-6403.

Technical Breakfast

Date: Tuesday,
October 9, 2001
Time: Doors 7:00 a.m.
Presentation 7:30 a.m.
Location: Anadarko Conference
Center

Speaker: Gary Coburn

Biography:

Gary Coburn is Geoscience Manager for Bell Geospace, Inc. Prior to joining Bell in 1997, he spent 20 years in petroleum exploration and production with a number of major and independent oil companies (CNG, Superior, Tenneco, Chevron, and Tathan Offshore). During that time, he gained considerable experience in onshore and offshore provinces, including the deepwater Gulf of Mexico. Coburn earned his B.S. degree in geology from the university of North Carolina. He is a member of SEG, AAPG, SPWLA, HGS, and GSH.

:3d Full Tensor Gradient Enhanced Seismic Interpretation Green Canyon/Walker Ridge Area, Offshore, LA.

Gary Coburn of Bell Geospace, Inc. and Jeff Schneider of Texaco, Inc.

Abstract:

The Green Canyon / Walker Ridge area contains numerous salt bodies. The salt movement and withdrawal has formed very large subsalt structures. Interpretation of the base of salt and the subsalt structures is extremely difficult, due to the poor quality of the subsalt imaging of seismic data. Factors affecting subsalt imaging are: Steep dips of the top of salt, rugose top of salt, salt structures with embodied sediments, multiples and velocity insensitivity.

To define the salt bodies both vertically and laterally, as well as the subsalt structures, full tensor gradient (FTG) data were collected. Texaco's interpretations of the top of salt and base of salt were converted to depth and a 3-D model constructed. Gradients were calculated and compared to the measured data via a differencing technique. Density grids, as well as the extent of the top of salt and the depth of the base of salt, were modified based on the difference maps. The process was repeated until a difference

of 3 Eötvös +/- was achieved. New Top of Salt, Base of Salt and Salt Isopach Maps were then generated.

The FTG analysis showed two deep-seated "keels" in the southern salt body and a rooted salt to the north. The FTG data detected a subsalt sand fairway that was subsequently confirmed by seismic data. This sand fairway masked the negative anomaly, which should have been present due to the salt, by creating a positive anomaly, due to the higher densities of the subsalt sands. Numerous overhangs are present in conjunction with the deep-seated salt bodies. Subsequent seismic processing done with the benefit of this study, has resulted in much improved base of salt and subsalt imaging which fully supports the conclusions reached by the FTG analysis.

Hickory Field: integrated technologies revitalize a sub-salt prospect

Luncheon of the University of Houston Geoscience Alumni Association (UHCAA).

Date: Wednesday,
October 10, 2001
Time: 11:30 AM
Place: Petroleum Club, 43rd
floor, 800 Bell Avenue
(Exxon Building)
(713-659-1431)
Cost: \$25

Contact Matt Martin at 281-874-1632 by noon Friday, October 5, 2001 or at (matt_martin@anadarko.com).

Scott Bugosh¹, Todd Fowler¹, Bob Golding¹, David Muerdter², and Davis Ratcliff²

Anadarko Petroleum, 17001 Northchase Drive, Houston, TX 77060, phone: 281-875-1101, scott_bugosh@anadarko.com,

Diamond Geoscience Research Corporation

The integration of improved seismic technologies and new geologic structural and stratigraphic models can often revitalize a prospect. This is a case history

of the Hickory subsalt prospect in offshore Louisiana where 3-D raytrace modeling, new geologic structural and depositional models, and improved seismic processing techniques were employed. They developed a prospect which when drilled became Hickory Field.

In 1994, Anadarko and Phillips drilled the Teak prospect, which was a non-commercial subsalt discovery. Initial mapping showed the Hickory prospect to be a synclinally separated look-alike, with little potential for better sand

Hickory Field continued on page 5

development.

Improvements in seismic imaging, notably a 3-D prestack depth migration, allowed the base of salt to be accurately re-interpreted and showed the minibasin to be open to the northeast, toward the potential sand sources. A new depositional model was developed in which deepwater turbidite sands were

transported into the basin from the northeast, making Hickory prospect potentially more sand-prone. Empirical models supported the likelihood of increased sand presence as compared to the Teak area.

The improved seismic imaging also revealed several amplitude anomalies. A raytrace modeling study was undertaken to better understand these amplitude anomalies and therefore reduce explo-

ration risk. Comparing modeled results to the existing 3-D prestack depth migrated seismic dataset enabled us to high-grade the initial location and make the exploratory well a success.

Membership Report

New members—Active

David Walker

Associate

Abdelazim Ibrahim

Francois Riff

Fuping Zhu

Total Membership: 1806

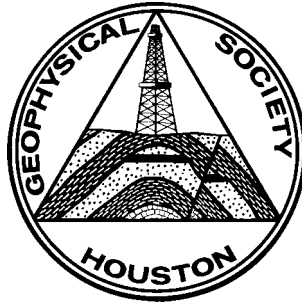
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2001

GSH TENNIS TOURNAMENT

FRIDAY, OCTOBER 5, 2001 at 12:00 NOON

**Chancellors Racquet Club
6535 Dumfries
Houston 77096**

Play will began promptly at 1:00 pm and conclude by 5:00pm. Lunch will began serving at 11:30am. Cold drinks will be available and we will have a keg for the COOLING DOWN TIME. This will be a half day A and B Scramble Tournament. A player will play with all other players in his group. Ladies will be teamed with partners in the A or B groups as they choose. In addition to TROPHIES, there will be a drawing for a generous group of DOOR PRIZES.

To ensure the proper amount of court space, food and drinks, complete and send in the entry form as soon as possible, but no later than October 1, 2001. We have more room for players and encourage you to contact your associates to participate in the tournament. We are again inviting players in the Geological Society to join us so as to have more players and more fun.

For more information call Bill Steiner 713/789-7250 or Joe Jones 281/438-5626

2001 GSH TENNIS TOURNAMENT ENTRY FORM

NAME _____

Phone No. _____ Company _____

FlightPreferred: A _____ B _____ Ladies _____

Make Checks Payable to: GSH Tennis Tournament
MAIL TO: Joe Jones 3802 Pecan Valley Drive, Missouri City, Tx. 77459

HGS/GSH
Shrimp Peel
Saturday, November 3, 2001

5:30 p.m. – 10:00 p.m.



Sam Houston Race Park

7575 N. Sam Houston Pkwy. West
(Beltway 8 between Hwy 290 & I-45N)

Tickets \$25.00 Advance / \$35.00 at the Door

- Advance ticket sales through October 26
- Tickets mailed to you beginning October 3
- Event held on the Infield (weather permitting)
- No refunds

2001 Shrimp Peel Ticket Order Form

Name _____
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Number of tickets _____

Make checks payable to HGS/GSH Shrimp Peel

Mail to: Subsurface Consultants & Associates / Attn : Lee Shelton
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For more information call 713-789-2444 or e-mail: LShelton@scacompanies.com

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OCTOBER 2001

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
	1	2	3	4	5 GSH Tennis Tournament Chancellors Racquet Club 6535 Dumfries 12:00 Noon	6
7	8	9 GSH Technical Breakfast Anadarko Conference Center	10 Luncheon of the University of Houston Geoscience Alumni Association (UHCAA). Petroleum Club	11 NEWSLETTER DEADLINE	12	13
14	15	16 GSH Technical Luncheon HESS Building	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

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